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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,809	01/13/2004	John Ng	50325-0831	5414

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EXAMINER	
RICHARDSON, THOMAS W	

ART UNIT	PAPER NUMBER
2144	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/757,809	NG ET AL.	
	Examiner	Art Unit	
	THOMAS RICHARDSON	2144	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10, 12-39* is/are pending in the application.

4a) Of the above claim(s) *11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7, 10, 12-18, 21-28, 30-36, and 39* is/are rejected.

7)☒ Claim(s) *8, 9, 19, 20, 29, 37, and 38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *26 October 2007, 16 January 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-10 and 12-39 are amended and pending for examination.

Claim 11 is cancelled.

Claims 1-7, 10, 12-18, 21-28, 30-36, and 39 are rejected.

Claims 8, 9, 19, 20, 29, 37, and 38 are objected to.

Response to Amendment

1. Examiner withdraws previous rejection of independent claims 1, 12, 22, and 30, as well as dependent claims 2-10, 13-21, and 23-29, in view of applicant amendment. New grounds of rejection are necessitated by amendment.

Response to Arguments

2. Applicant's arguments with respect to claims 1-10 and 12-39 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

3. The drawings were received on 31 December 2007. These drawings are accepted, and the drawing objection is withdrawn in view of the amended drawings.

Specification

4. The specification amendment was received on 31 December 2007. The objection to the specification is withdrawn in view of the amendment.

Claim Rejections - 35 USC § 112

5. The rejection under 35 U.S.C. § 112, second paragraph is withdrawn in view of amended claims 1, 12, 22, and 30.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 12-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims are directed toward a computer-readable medium, which as defined in paragraphs [0171]-[0172] of the specification may include transmission media and further carrier waves. Examiner suggests further limiting the claims to “non-volatile" or “volatile" memory as defined in paragraph [0171] or amending the specification to further distinguish between media types.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1, 4, 7, 9, 12, 14, 15, 18, 20, 22, 24, 25, 28, 30, 32, 33, 36, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0078999, Lund et al, US 6 826 611, Arndt, and US 6 714 972, Lee et al.

10. As per claims 1, 12, 22, and 30, Lund teaches a method, computer-readable medium, and an apparatus for provisioning a first device operable with internet protocol (IP) in a virtual circuit network (abstract, where method and apparatus work in a virtual circuit with DSL), the method, computer-readable medium, and apparatus comprising the computer-implemented steps of:

receiving a list of identifiers corresponding to virtual circuits from a configuration interface for the virtual network (page 2, paragraph [0020], wherein the probe values are accessed via the "VC Table"); and

applying each identifier to individual instances of interface configuration commands until connectivity with a remote device is established (page 2, paragraph [0020], wherein the probe values test for connectivity to a remote device, also page 3, Table 1, where different probe values represent different connectivity paths), comprising the steps of:

testing the virtual circuit corresponding to the identifier selected from the list for connectivity with the remote device (page 2, paragraph [0020], wherein the probes test for connectivity); and

if the virtual circuit provides connectivity to the remote device, then choosing the virtual circuit corresponding to the selected identifier for connecting to the remote device, otherwise, iteratively applying the above steps for a next identifier in the list until the list is exhausted (page 4, paragraph [0036] shows that if connectivity is established, the virtual circuit is set up, also, that a request may start after the probe is finished.

Lund does not teach a system for setting up a device IP address with on a local subnet. In Arndt's device, a client connects with another remote host, and in doing so, the local host establishes a local IP address, following a method which includes:

iteratively applying configuration commands until connectivity is established (abstract, where the address is decremented and tested until connectivity is established);

receiving the IP address of the second device terminating the virtual circuit corresponding to an identifier selected from the list (Column 5, lines 37-45, wherein the device uses ARP to discover local IP configurations of Arndt); and

determining an IP address for the first device (abstract, where the method and apparatus iterates until a proper address is found).

Neither Lund nor Arndt teaches requesting and receiving a list of identifying information associated with VC devices. Lee teaches a method and apparatus for configuring network devices in an ATM network comprising:

a first device requesting, from a second device a list of identifiers corresponding to virtual circuits from a configuration interface for the virtual circuit network (column 3, lines 13-34, where the endpoint device requests some or all of the configuration information for PVCs from another device on the ATM network); and

requesting information by a first device from a second device, wherein the first and second devices are termination points of a virtual circuit (column 1, lines 57-64, where the connections in the ATM network between any two endpoint devices are accomplished through the use of virtual circuits).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use Arndt's method of obtaining an IP address with Lund's system of

testing for connectivity, as the device connecting to the network would need a new IP address with its connection. Arndt's invention allows a device to connect automatically to a network with a valid IP address and subnet (abstract), which makes the process easier and more efficient.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize any of the above methods within a virtual circuit network, as taught by Lee. Lee utilizes requesting a list of identifiers such that devices may automatically become part of the network. This is beneficial, as it allows the devices to configure themselves within the network without manual intervention (Lee, column 3, lines 13-34). It also would have been obvious to use either Arndt's method within a virtual circuit environment. ATM networks are well known in the art, as shown by Lund, and requests for address resolution through ARP or other similar techniques can be done without regard to the network type.

11. As per claims 3, 14, 24, and 32: the combination of Lund and Arndt teaches the method, computer-readable medium, and apparatus as recited in Claims 1, 12, 22, and 30, wherein the virtual circuit network comprises an Asynchronous Transfer Method (ATM) relay network (page 2, paragraph [0015] describes the use of the ATM protocol in high-speed networks), and wherein the step of receiving the list of identifiers corresponding to virtual circuits from the configuration interface for the virtual circuit comprises:

> receiving an Interim Local Management Interface (ILMI) message comprising a list of at least one of a plurality of Virtual Channel Identifiers or Virtual Path Identifiers (VCI/VPI) in the network (Lund teaches this

limitation. Page 2, paragraph [0019] teaches that ILMI messages containing configurations may be used to automatically configure the virtual circuit).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use this format. ILMI messages, as shown by Lund, are given as an ATM Forum Specification for auto-configuration of virtual circuits (page 2, paragraph [0019]). This method, as well known in the art, would be used to transmit virtual circuit information.

12. As per claims 4, 15, 25, and 33, the combination of Lund and Arndt teaches the method, computer-readable medium, and apparatus as recited in Claims 1, 12, 22, and 30, wherein the step of iteratively applying each identifier to individual instances of interface configuration commands until the connectivity with the remote device is established further comprises:

iteratively incorporating successive virtual circuit identifiers from the list into dynamically constructed commands to configure an interface to the virtual circuit network and successively applying the commands to the interface (Lund teaches this limitation. Page 3, paragraph [0027] teaches that the configuration information is retrieved from a table and the virtual circuit is configured accordingly. Lund does not teach this process done iteratively, but Arndt teaches obtaining an address iteratively (abstract)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use this combination, as the iterative process as given by Arndt allows the system to explore all addresses within a subnet (Column 4, lines 45-

55). This would have been obvious in Lund's system, as it would allow all circuits in a table to be tested for connectivity, while those not used could be disabled (page 3, paragraph [0029]).

13. As per claims 7, 18, 28, and 36, the combination of Lund and Arndt teaches the method, computer-readable medium, and apparatus as recited in Claims 1, 12, 22, and 30, wherein the step of determining the IP address for the first device comprises the steps of:

> determining a netmask for the first device, wherein the subnet for the first device is smaller than or equal to a subnet of the second device terminating the virtual circuit corresponding to the selected identifier (Arndt teaches this limitation. Column 4, lines 39-45 teach that a narrow subnet is either manually entered or selected by monitoring network traffic); and
>
> determining the IP address for the first device valid in the subnet of the second device based upon the IP address of the second device terminating the virtual circuit (Arndt teaches this limitation. Column 4, lines 57-63 teach that the device selects an IP address valid within the selected subnet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include this feature in the combination. As a device connects in a virtual circuit, it must have an IP address valid within the same subnet at the device it is trying to connect to. Arndt's feature would allow a device to connect on any network, logical or virtual, with a valid IP and subnet address (Column 5,

lines 52-61, where the device chooses a preferred connection within its subnet through routing protocols).

14. Claims 2, 10, 13, 21, 23, 31, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund, Arndt, and Lee as applied to claims 1, 12, 22, and 30 above, and further in view of WO 1999/041937, Reece et al.

15. As per claims 2, 13, 23, and 31, the combination of Lund and Arndt teaches a method, computer-readable medium, and apparatus as recited in claims 1, 12, 22, and 30.

Reece teaches a system for establishing a virtual circuit through a packet switched network wherein the virtual circuit comprises a frame relay network (page 10, lines 19-22, where the invention as described could be used in any packet switched network, such as frame relay), and wherein the step of receiving a list of identifiers corresponding to virtual circuits from the configuration interface for the virtual circuit network further comprises:

> receiving a Local Management Interface (LMI) message comprising a list of at least one of a plurality of Data Link Connection Identifiers (DLCIs) in the network (by suggesting the use of a frame relay network, Reece implies the use of the DLCI messages, as they are the equivalent of the VCI/VPI messages in the ATM network taught on page 4, lines 10-16).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use any of Lund, Arndt, or Lee's methods in a frame relay network. In order for a system to connect to another, it must have the destination address, including a path representation to communicate with that address. It is well

known in the art that for a packet-switched network, the means of addressing in routing must be included in each packet, and for a frame relay network as suggest by Reece, a common method would be using DLCI, as an equivalent to the VCI/VPI of an ATM network.

16. As per claims 10, 21, and 39, the combination of Lund and Arndt teaches a method, computer readable medium, and apparatus as recited in claim 1. Reece teaches a system for establishing a virtual circuit through a packet switched network which comprises:

> automatically communicating an inventory of all interfaces associated with the first device to the remote device upon establishing connectivity with the remote device (page 4, lines 18-24, where the component supplies a list of destination terminals which are associated with the terminal).

It would have been obvious to one of ordinary skill in the art at the time of the invention to communicate this list in any of Lund, Arndt, or Lee's methods, as it would provide all devices with terminals that can be accessed. This would allow the devices to set up the virtual circuit automatically, making it more efficient, as there would not be need of a person to manage the system (Reece, page 1, lines 21-23).

17. Claims 5, 16, 26, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund, Arndt, and Lee as applied to claims 1, 12, 22, and 30 above, and further in view of Comer (*Computer Networks and Internets*).

18. As per claims 5, 16, 26, and 34, the combination of Lund and Arndt teaches a method, computer-readable medium, and apparatus as recited in

claims 1, 12, 22, and 30, wherein the step of testing the virtual circuit corresponding to the identifier selected from the list for connectivity with the remote device further comprises:

> pinging the remote device, wherein the remote device comprises configuration server (Comer teaches that it is common in the art of computer networks to ping a server to establish proof of connectivity (255)).

This would have been obvious to one of ordinary skill in the art at the time of the invention, as it was a common method to check for connectivity in any network.

19. Claims 6, 17, 27, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund and Arndt as applied to claims 1, 12, 22, and 30 above, and further in view of OpenROUTE Networks ("Using the ARP and Inverse ARP Protocols").

20. As per claims 6, 17, 27, and 35, the combination of Lund and Arndt teaches a method, computer-readable medium, and apparatus as recited in claims 1, 12, 22, and 30, wherein the step of requesting the IP address of the second device terminating the virtual circuit further comprises:

> forming an Inverse Address Resolution Protocol Request (IARP); and sending the IARP request to the second device terminating the virtual circuit (OpenROUTE teaches that using the IARP protocol as defined by RFC 1293 allows a device to learn the protocol addresses of other devices (page 2)).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use this protocol as a way of discovering the addresses of connected devices. In Lund's system, a device connects using only the local address, and in order to function properly on the local network, it must have a local IP address as well. In addition, Arndt's system requires the IP address of a terminating device. In order to give the device a local address, the device must first have the IP address of other connected devices, and IARP, as stated by OpenROUTE, allows for a device to discover all protocol addresses, including IP (page 2).

Allowable Subject Matter

21. Claims 8, 9, 19, 20, 29, 37, and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Amended claims differ from cited prior art, as the IP address of the second device is used as a reference for the step-wise approach of assigning a device IP address. In the cited prior art (Arndt), the IP address of the first device is used as a reference, and the device decrements its address with regard only to the subnet of the other devices on the network. The method as described by applicant, of incrementing and subsequently decrementing the address with respect to the IP address of the device terminating the connection, shows different from the method of decrementing IP addresses until an address is accepted as taught by Arndt. Arndt neither teaches nor reasonably suggests a motivation for using the IP address of a device on the network as a reference point within the subnet.

Conclusion

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 7 221 675, Bryden et al teaches an address resolution method for a virtual private network, and customer edge device for implementing the method.

US 7 185 113, Haberman et al teaches a system and method for establishing a virtual circuit in an ATM network.

US 6 707 820, Arndt et al teaches virtual circuit network dynamic channel management.

US 7 136 645, US 6 981 047, US 6 546 425, Hanson et al teaches a method and apparatus for providing mobile and intermittent connectivity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS RICHARDSON whose telephone number is (571) 270-1191. The examiner can normally be reached on Monday through Thursday, 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Vaughn can be reached on (571) 272-3922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TR
3/12/2008

/William C. Vaughn, Jr./
Supervisory Patent Examiner, Art Unit 2144